

**Notice of Allowability**

Application No.

10/084,684

Applicant(s)

STANDARD ET AL.

Examiner

Andrew Graham

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.


1. ☐ This communication is responsive to \_\_\_\_.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_

  
HUYEN LE  
PRIMARY EXAMINER

  
Andrew Graham  
571-272-7517

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**EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with David Weiss on December 6, 2005.

3. The previously pending claims (1-21) have been amended. Certain claims have been amended to define the acronyms otherwise applied in the claims. By this examiner's amendment, Claim 21 has been cancelled. The following listing of claims replaces all previous versions of the claims.

The application has been amended as follows:

IN THE CLAIMS:

1. A Digital Multiplex lighting protocol (DMX) encoder, comprising:
  - a DMX input port configured to receive a DMX data stream having DMX data;
  - a level shifter configured to shift the DMX data stream to a Transistor-Transistor-Logic (TTL) level;
  - a universal asynchronous receiver and transmitter configured to format the DMX data stream into a plurality of packets;

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a digital signal processor configured to insert the plurality of packets into an Audio Engineering Society/European Broadcasting Union (AES) digital audio stream to produce an encoded data stream carrying the DMX data;

an AES formatter configured to shift the encoded data stream to an unbalanced AES digital audio stream; and

a transformer configured to transform the unbalanced AES digital audio stream to a balanced AES digital audio stream.

2. The DMX encoder as defined in Claim 1, wherein the AES digital audio stream is received from the AES formatter.

3. The DMX encoder as defined in Claim 1, wherein the AES formatter is configured to generate the AES digital audio stream.

4. The DMX encoder as defined in Claim 1, further comprising an AES input port coupled to the AES formatter.

5. The DMX encoder as defined in Claim 4, wherein the AES formatter is configured to receive the AES digital audio stream from the AES input port.

6. The DMX encoder as defined in Claim 4, wherein the AES formatter is configured to receive an AES word clock signal that is derived from the AES input port.

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7. The DMX encoder as defined in Claim 6, wherein the AES word clock signal synchronizes an output of the AES formatter.

8. A method of encoding a Digital Multiplex lighting protocol (DMX) data stream into a balanced Audio Engineering Society/European Broadcasting Union (AES) digital audio stream, the method comprising:

- receiving a DMX data stream having DMX data;
- shifting the DMX data stream to a Transistor-Transistor-Logic (TTL) level;
- formatting the DMX data stream into a plurality of packets;
- inserting the plurality of packets into an AES digital audio stream to produce an encoded data stream carrying the DMX data;
- shifting the encoded data stream to an unbalanced AES digital audio stream; and
- transforming the unbalanced AES digital audio stream to a balanced AES digital audio stream.

9. The method of encoding as defined in Claim 8, further comprising generating the AES digital audio stream.

10. The method of encoding as defined in Claim 8, further comprising receiving the AES digital audio stream.

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11. The method of encoding as defined in Claim 8, further comprising receiving an AES word clock signal for synchronization.

12. A Digital Multiplex lighting protocol (DMX) decoder, comprising:

an Audio Engineering Society/European Broadcasting Union (AES) formatter configured to receive an AES digital audio stream having a cyclic redundancy code value and DMX data;

a digital signal processor configured to receive the AES digital audio stream, to determine whether the cyclic redundancy code value is valid, and to extract the DMX data from the AES digital audio stream if the cyclic redundancy code value is valid and to retrieve stored DMX data if the cyclic redundancy code value is not valid;

a universal asynchronous receiver and transmitter configured to receive the DMX data; and

a level shifter configured to shift the DMX data to a DMX output level.

13. The DMX decoder as defined in Claim 12, wherein the AES formatter is further configured to convert the AES digital audio stream to a Transistor-Transistor-Logic (TTL) level.

14. The DMX decoder as defined in Claim 12, wherein the AES formatter is further configured to verify that the AES digital audio stream is a valid AES stream.

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15. The DMX decoder as defined in Claim 12, wherein the digital signal processor is further configured to store a plurality of DMX codes representing a particular scene.

16. The DMX decoder as defined in Claim 12, wherein the universal asynchronous receiver and transmitter is further configured to format the DMX data.

17. A method of decoding an Audio Engineering Society/European Broadcasting Union (AES) digital audio stream into a Digital Multiplex lighting protocol (DMX) data stream, the method comprising:

- receiving an AES digital audio stream having a cyclic redundancy code value and DMX data;

- sending the AES digital audio stream to a digital signal processor,

- determining whether the cyclic redundancy code value is valid;

- if the cyclic redundancy code value is valid, then extract the DMX data from the AES digital audio stream, and

- if the cyclic redundancy code value is not valid, then retrieve stored DMX data from the digital signal processor;

- sending the DMX data to a universal asynchronous receiver and transmitter;

- formatting the DMX data; and

- shifting the DMX data to a DMX output level.

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18. The method of decoding as defined in Claim 17, further comprising storing a plurality of DMX codes in the digital signal processor, the plurality of DMX codes representing a particular scene.

19. The method of decoding as defined in Claim 17, further comprising storing a plurality of scaler DMX codes in the digital signal processor.

20. The method of decoding as defined in Claim 19, wherein the digital signal processor compares the plurality of scaler DMX codes with the DMX output level to ensure that the DMX output level is not greater than one or more of the plurality of scaler DMX codes.

21. (cancelled)

IN THE SPECIFICATION:

- the non-character "[ ]" boxes in paragraph 0038 have been replaced with the "™" (trademark ™) symbol in order to indicate that the respective preceding words are trademarks
- in paragraph 0046, "tracks 16" has been changed to "tracks 1-6" and "tracks 78" would be changed to "tracks 7-8" in order to correct a typographical error
- in paragraph 0057, "Figures 58" has been changed to "Figures 5-8" in order to correct a typographical error

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*Allowable Subject Matter*

4. Claim 1-20 are allowed. For purposes of allowance, the original numbering of the claims has not been changed.

5. The following is an examiner's statement of reasons for allowance:

The general concept of transmitting DMX lighting protocol signals with audio or other entertainment signals was known in the art at the time of the invention, as evidenced by the Lys et al references cited below (see, for example, Figures 85-89 and col. 49, line 65 - col. 53, line 23 of the USPN 6577080 reference). However, the examiner has not found prior art that teaches or suggests the modification of Lys et al in order to encode and decode said DMX data into an AES/EBU formatted signal, wherein said encoding and decoding comprises each and every component or step defined in the independent claims 1, 8, 12, and 17. Other prior art has been cited herein regarding the combined transmission of audio and control signals. However, the other prior art of record also fails to teach or provide suggestion to arrive the combination of the elements and steps presented in the independent claims, again, when said elements or steps are collectively considered in regards to each claim. For at least the reasons listed above, the dependent claims are also allowed in view of their respective dependencies upon the independent claims.



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### *Conclusion*

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lys et al (USPN 6577080 B2 and 6166496 A) disclose systems for combining a DMX formatted signal with an entertainment signal, which may be an audio signal, further comprising the transmission and reception of said signal.

Oxford (USPN 5577044 A) discloses a protocol for transmitting audio and control information in a serial format between functional units.

Kloker (USPN 5214705 A) discloses a system for transmitting and receiving audio and non-audio data formatted according to the AES/EBU protocol.

Hoque (USPN 4922536 A) discloses a system for transmitting and receiving audio and control data in a theater or stage environment, noting that lighting control signals are one known type of transmitted control signal.

Islaim (USPN 6937295 B1) discloses a system for realistically recreating a live performance at a location remote from the geographical location of the live performance.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Graham

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whose telephone number is 571-272-7517. The examiner can normally be reached on Monday-Friday, 8:30 AM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Andrew Graham  
Examiner  
A.U. 2644

ag  
December 9, 2005

  
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PRIMARY EXAMINER